

Ecosystem Services: A New Era in Conservation

CSS 235
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Ecosystem Goods



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Ecosystem Services

- Conditions and processes through which natural ecosystems, & the species that make them up, *sustain* and *fulfill* human life (*Daily*)
- The actual life-support functions our environment provides us (cleansing, recycling...)
- USFS – Specific results of ecosystem processes that directly sustain or enhance human life or maintain the quality of ecosystem goods

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Ecosystem Services

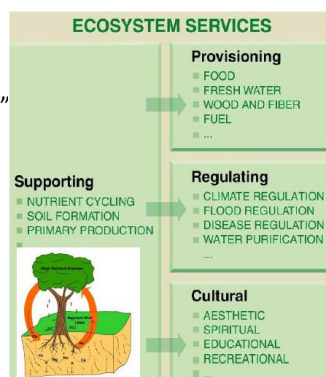
- Widely used term since late 1990s
- Helped lead to “ecosystem management” concept
- Points the way toward sustainable development
- Local/Regional/National/Global Scale



Healthy ecosystems provide free “services” to human communities, including: water filtration, groundwater recharging, stormwater control, air purification, nutrient recycling, crop pollination, and soil enrichment.

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- 100s of “services” can be classified into four functions



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“Poorly” Understood

- Traditionally viewed as free benefits to society, or “public goods” - wildlife habitat and diversity, watershed services, carbon storage, and scenic landscapes, for example.
- Lacking a formal market -- natural assets are traditionally absent from society’s balance sheet.
- Their critical contributions are often overlooked in public, corporate, and individual decision-making.

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“Poorly” Understood

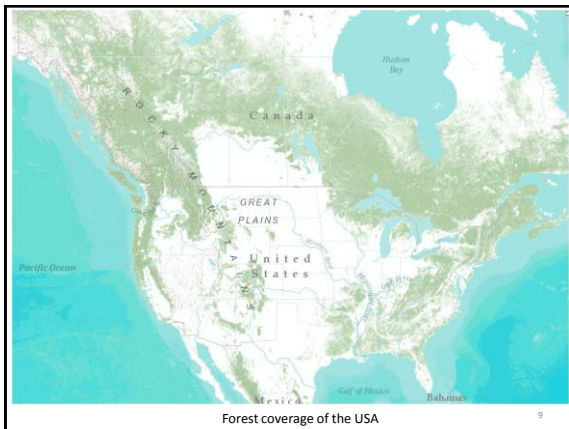
- When our forests are undervalued they are increasingly susceptible to development pressures and conversion.
- Recognizing forest & range & aquatic ecosystems as natural assets with economic and social value will help to:
- Promote conservation and more responsible decision-making.

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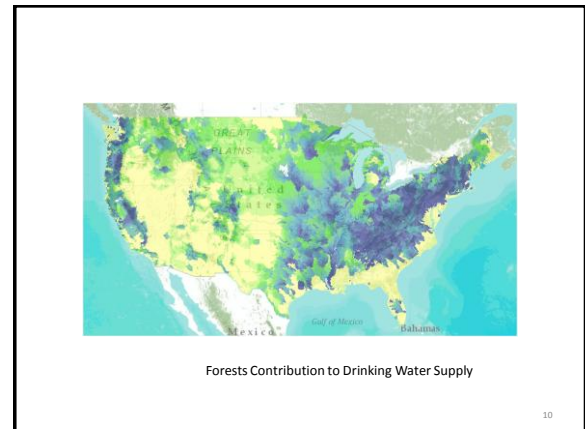
Globally Significant

- Natural ecological cycles are billions of years old.
- Globally pervasive but largely unnoticed by most humans.
- Noticed or not, humans depend utterly on the continuation of natural cycles.
- Only in modern times have humans disrupted these cycles on more than a “local” scale (*Daily*).

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Valuing Ecosystem Services

Costanza et al. (1997). The value of the world's ecosystem services and natural capital. *Nature*, 387:253-260.

- Synthesized 100+ studies and methods attempting to value ecosystem services (mostly willingness-to-pay)
 - Most services do not even pass through monetary systems, they benefit people as public goods (e.g. clean air)



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Valuing Ecosystem Services

Costanza et al. (1997). The value of the world's ecosystem services and natural capital. *Nature*, 387:253-260.

- To estimate total value of ecosystem services, the authors estimated ecosystem extent and compiled values from several studies



Results:

- Global ecosystems provide, on average, \$33 trillion dollars worth of services per year
- World GNP (in 1994) = \$18 trillion

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Valuing Ecosystem Services

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Study limitations:

- Ecosystems are constantly changing
- Some studies left out major biomes (e.g. cropland, ice/rock, tundra)
- Some ecosystem services have yet to be identified
- Willingness-to-pay might not provide accurate numbers



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Discussion

- Ecosystem services are too often ignored or undervalued . . .
- If ecosystem services were actually paid for, how would the market be different?
- If we had to pay for loss or damage to ecosystem services caused by current management practices, who would pay?

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Discussion

- Do we ever really ignore the cost of ecosystem services, or do we just pass it on to others to pay?
- How would you distribute costs equitably?
- How would you disburse payments received?

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- Gas regulation
- Climate regulation
- Disturbance regulation
- Water regulation (quantity & quality)
- Water supply—storage & retention
- Erosion control & sediment retention
- Soil formation

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